Article:
Hofstra, Emma, Bakker, Marjan, Diepstraten, Chiara A. M. et al. (4 more authors) (2020) The association between suicide-related media coverage and suicide : a cross-sectional observational study. Archives of Suicide Research. ISSN 1381-1118

https://doi.org/10.1080/13811118.2020.1851833

Archives of Suicide Research

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/usui20

The Association Between Suicide-Related Media Coverage and Suicide: A Cross-Sectional Observational Study

Emma Hofstra , Marjan Bakker , Chiara A. M. Diepstraten , Iman Elfeddali , Mathilde S. Lucas , Chijs van Nieuwenhuizen & Christina M. van der Feltz-Cornelis

To cite this article: Emma Hofstra , Marjan Bakker , Chiara A. M. Diepstraten , Iman Elfeddali , Mathilde S. Lucas , Chijs van Nieuwenhuizen & Christina M. van der Feltz-Cornelis (2020): The Association Between Suicide-Related Media Coverage and Suicide: A Cross-Sectional Observational Study, Archives of Suicide Research, DOI: 10.1080/13811118.2020.1851833

To link to this article: https://doi.org/10.1080/13811118.2020.1851833

Published online: 04 Dec 2020.

ARCHIVES OF SUICIDE RESEARCH
https://doi.org/10.1080/13811118.2020.1851833

Routledge
Taylor & Francis Group

The Association Between Suicide-Related Media Coverage and Suicide: A Cross-Sectional Observational Study

Emma Hofstra, Marjan Bakker, Chiara A. M. Diepstraten, Iman Elfeddali, Mathilde S. Lucas, Chijs van Nieuwenhuizen, and Christina M. van der Feltz-Cornelis

ABSTRACT

Objective: To examine the association between the publication and content of suicide-related media reports and actual suicide in Noord Brabant, a province of the Netherlands.

Method: Between April 2017 and March 2018, a retrospective cross-sectional observational study was conducted on suicide-related media reports and incident data regarding suicides. Linear regression, Mann-Whitney *U* and negative binomial regression analyses were conducted.

Results: In Noord-Brabant, a total of 352 people died from suicide during the observation period and 440 reports were identified by using the search terms "suicide", "self-killing", and "self-murder". No associations between media reports and actual suicides were found for any of the analyses performed.

Conclusions: No indications were found for an association between media coverage of suicide and increases or decreases in actual suicides in Noord-Brabant. The descriptive statistics of this study reveal that the regional and national Dutch media are doing well with respect to not including elements in their reports that could encourage copycat behavior, such as simplifying, romanticizing or dramatizing. They could improve on including protective content, for example, providing supportive background information. A recommendation for further research is to evaluate causal relationships between media and actual suicide. A stepped wedge trial might be needed, as this provides an ethical research design to investigate this issue in a controlled setting. Also, in such a study, other variables influencing the decision to attempt suicide should be taken into account as much as possible.

KEYWORDS
Guidelines; media; Netherlands; prevention; suicide

INTRODUCTION

After the publication of Goethe's novel "The Sorrows of Young Werther" in 1774, in which the main character Werther died by suicide, it was observed that young people seemed to copy his suicide in real life. They often wore the same clothes as him, used the same method and Goethe's book was regularly found on site (Phillips, 1974; WHO, 2017). This has triggered a debate about the association between media portrayal of suicide and actual suicide. In 1974, Phillips was the first to demonstrate an association in an empirical study (Phillips, 1974).

Nowadays, much evidence has been collected internationally, indicating that suicide-related media reports precede increases in actual suicide (Niederkrotenthaler

et al., 2009, 2010; Pirkis & Blood, 2018; Sisask & Värnik, 2012). The suicides of Robert Enke and Robin Williams, for instance, who were both famous, resulted in subsequent suicides across countries (Koburger et al., 2015; Pirkis et al., 2020). This phenomenon of imitation is often referred to as copycat behavior or the Werther effect (Niederkrotenthaler et al., 2010; Phillips, 1974). Due to the body of evidence now available, Pirkis and Blood even concluded that the relationship between media portrayal and actual suicide is causal (Pirkis & Blood, 2001).

To promote responsible media reporting, the World Health Organization (WHO) has developed guidelines that underline the importance of not glamorizing or sensationalizing suicide and of providing information about help services and positive coping (WHO, 2017). Suicides might be prevented when these guidelines are properly followed (Bohanna & Wang, 2012). In addition to these guidelines, the content of the media report can also be of influence on suicide. Sinyor and colleagues have recently performed an extensive study on the association between media item characteristics and suicide (Sinyor et al., 2018). For example, media reporting on suicide by a celebrity is more likely to result in copycat behavior than reports about non-famous people (Niederkrotenthaler et al., 2012, 2020; Sinyor et al., 2018). Repetitive reporting, explicitly naming dramatic and highly lethal methods of suicide, emphasizing the inevitability of suicide, the use of prominent, glamorizing or sensationalizing items, and the degree of identification between the reported person and the reader are also related to copycat behavior (Niederkrotenthaler et al., 2010, 2020; Sinyor et al., 2018; Sisask & Värnik, 2012). It also matters whether a report is about a suicide case or suicide news in general (Niederkrotenthaler et al., 2010).

In the Netherlands, where suicide rates have been increasing since 2007, there is ample attention for the prevention of suicide through a National Agenda for Suicide Prevention and awards of grants for scientific research (Statistics Netherlands, 2018; 113 Suicide prevention, n.d.; ZonMw, 2015). In 2018, we implemented the suicide prevention system SUPREMOCOL, which stands for Suicide Prevention by Monitoring and Collaborative Care, in Noord-Brabant, a province in the Netherlands (Hofstra et al., 2019). Its launch received media attention and we were concerned whether this could lead to increases in suicides. As far as we know, only Ganzeboom and Haan (1982) and Köpping, Ganzeboom, and Swanborn (1989) examined the Werther effect in the total population of the Netherlands, and they did not find any convincing effects (Ganzeboom & Haan, 1982; Köpping et al., 1989). Therefore, we called for an explorative study to media coverage on suicide and suicide rates in the specific area in which the SUPREMOCOL intervention was implemented.

Objectives

This study aimed to examine the effect of suicide-related media reports on actual suicide in Noord-Brabant, the Netherlands by examining the following objectives:

1. Explore the association between the publication of media reports on any suicide issues (dichotomous) and subsequent suicide. Hypothesis: more suicides will occur following days on which there were media reports on suicide, compared to days on which there were no reports on suicide (Pirkis & Blood, 2018).

2. Explore the association between the number of media reports on any suicide issues (continuous) and subsequent suicide. Hypothesis: the number of suicides will increase if more reports on suicide were published on the same day, compared to days when no or less reports on suicide were published (Etzersdorfer, Voracek, & Sonneck, 2004; Pirkis, Burgess, Francis, Blood, & Jolley, 2006).
3. Explore the association between the amount of media attention on specific suicide cases (people who have died by suicide) and subsequent suicide. Hypothesis: suicide cases that receive extensive media attention are associated with higher subsequent suicides than cases that receive less media attention (Koburger et al., 2015). For this, we also explored whether a high-profile suicide of a celebrity was associated with increases or decreases in the number of subsequent suicides.
4. Identify characteristics of media reports that are associated with increases or decreases in subsequent suicide. Hypothesis: publishing about the method of suicide, a suicide by a celebrity, and gender and age of the deceased are related to increases in suicides, and adherence to media guidelines is related to decreases (Sisask & Värnik, 2012; Stack, 2005). In addition, it was explored whether the effect of suicide-related media reports on actual suicide differed by type of media report.

MATERIALS AND METHODS

Study Setting and Design

This is a retrospective observational study on national and regional suicide-related media content and actual suicides in the province of Noord-Brabant, the Netherlands. The observation period of this study lasted from March 14, 2017 to March 31, 2018. In this period, Noord-Brabant had a population of about 2.5 million residents and 365 suicides in 2017 and 302 in 2018 (Statistics Netherlands, 2018).

Data Sources and Measurements

Suicides

Data on suicides were obtained via the Public Health Institutes: "GGD Brabant-Zuidoost", "GGD West-Brabant", and "GGD Hart voor Brabant". Suicide death certificates were issued based on strict guidelines involving several professionals (Statistics Netherlands, 2019; Värnik et al., 2010). PHIs receive these death certificates from their coroners, who ascertain the (unnatural) cause of death.

Media Reports

Media reports covering suicide were obtained via a selection of media outlets that were all available online and some also printed. The media included two national online outlets (Nu.nl & NOS), two national print and online outlets (De Volkskrant & Metro), and one regional online outlet (Omroep Brabant). This combination of outlets was made to create a wide reach, as older people tend to mainly make use of traditional media, whereas online media are more frequently used by young people (Commissioner of the media, 2018).

Procedure

Suicide-related media reports were identified by two coders (ML and CD). Reports were included if at least one of the three words that are commonly used to describe suicide were used: "suicide", "self-killing", and "self-murder" [in Dutch: suïcide, zelfdoding, zelfmoord]. Next, the type of media report was determined. This variable consisted of: (1) reports about a specific suicide that had happened (suicide-case), (2) reports about suicide-related news, such as suicide statistics (suicide-news), or (3) suicide was not the main subject of the report, or the term suicide was used proverbial (remaining category). Interrater reliability for type of report was 0.815, corresponding to "almost perfect agreement." In the next step, the same two coders—using a structured scoring format—scored the reports. A codebook with an explanation and specification of the items is available via the first author. The scoring categories for the guidelines consisted of adherence (scored 1) or no adherence (scored 0). A sum score was created ranging from zero (poor adherence) to nine (good adherence). The guideline regarding celebrities was independently evaluated for cases concerning celebrities and was therefore not taken into account in analysis. The Statement of the Strengthening the Reporting of Observational Studies in Epidemiology was used for reporting the study (Von Elm et al., 2014).

Variables

Suicides are formed by the regional number of suicides in the period of February 28, 2017 until April 6, 2018. Suicide was defined as an act performed by the person him/herself with the specific purpose of taking his/her own life that indeed led to death (Värnik et al., 2010). As was done in the study of Niederkrotenthaler et al. (2010), suicides were allocated to pre- and post-lags and this was done for each day in the observation period (for RQ1 & 2) and each media report (for RQ3 & 4) (Niederkrotenthaler et al., 2010). The post-lag included the number of suicides in the week directly following the publication of the report (day 0–6). The pre-lag included the number of suicides during one week, in the period two weeks before publication of the report (day −14 to −8). The week directly before publication (day −7 to −1) was not included, because other media - than those we included in our study—might already have published about the topic, which would cause bias. The outcome variable was the difference in the number of suicides between the pre- and post-lag.

Suicide-related media reports were included if they were published in print or online between March 14, 2017 and March 31, 2018. Two new variables were formed:

- *Publication of suicide-related media reports* consisting of two categories: no publication (code 0), one or more publications (code 1).
- *Number of suicide-related media reports* consisting of the number of media reports about suicides per day (continuous).

A *suicide-identification number* was assigned which refers to all media reports about a suicide of a specific person. These media reports may comprise reporting on the suicide

event itself but may also comprise content that follow after the suicide has happened, such as when more information about the event has become available.

The *Type of media report*, as already discussed in "Procedure" was also scored for each report.

For the suicide-cases, *characteristics of media reports* were scored, consisting of the method, gender, age, and celebrity-status of the deceased, and guideline adherence were scored. These characteristics were not scored for reports in the suicide-news and remaining category. National guidelines were used because these are the guidelines the Dutch media must adhere to. These guidelines are comparable in content to the WHO guidelines. The Dutch media guidelines advise that the media should (1) show restraint, (2) not give specific details, (3) not romanticize or dramatize the suicide, (4) not over-simplify the suicide, (5) use abstract visual imagery, (6) provide supportive/background information, (7) respect the privacy of the person that died by suicide and their relatives, (8) be particularly careful with regards to celebrities, (9) refer to reliable sources of information, and (10) emphasize the need for seeking help (Vons, 2012).

Seasonal patterns in suicide were based on suicides that happened in Noord-Brabant in 1996–2014. For each day in the observation period (RQ 1 & 2) or media report (RQ 3 & 4), the difference in the number of suicides before and after was calculated. This was done in the same manner as for the suicides variable.

Power Analysis

Power analyses were conducted for the research questions, in which an alpha of 0.05 and a power of 0.80 was applied. For research questions 1 and 2, it was possible to detect effect sizes of $f^2 = 0.02$ (small), as there were 383 units of analysis (days in the observation period) and two predictors (media report and seasonal patterns). It was possible to detect effect sizes of $f^2 = 0.09$ (medium) for research question 3, with 85 units of analysis (suicide-identification numbers) and two predictors (media report and seasonal patterns). With regards to research question 4, there were 119 units of analysis (suicide-events) and six predictors (five characteristics and seasonal patterns), therefore, it was possible to detect effect sizes of $f^2 = 0.07$ (medium).

Inter-Rater Reliability

Ten percent of the media reports ($n = 47$) were scored in duplicate. Cohen's κ for the characteristics ranged from 0.815 to 0.891, which corresponds to "almost perfect agreement", as is shown in Table 1. The Cohen's κ for the guidelines ranged from 0.870 (almost perfect agreement) to 0.497 (moderate agreement). The two coders afterward discussed differences in scoring and determined correct answers and the final scoring formats were added to the database.

Statistical Methods

Suicides were corrected for seasonal fluctuations (Hofstra et al., 2018). The seasonality variable, which was based on the mean number of suicides per day over a 21-year

TABLE 1. Cohen's κ agreement scores for the duplicate media reports ($n = 47$).

Variable	Cohen's κ	Interpretation
Characteristic		
Type of media report	0.815	Almost perfect agreement
Suicide-identification number	0.891	Almost perfect agreement
Gender	0.876	Almost perfect agreement
Age	0.887	Almost perfect agreement
Celebrity status	0.878	Almost perfect agreement
Method of suicide	0.881	Almost perfect agreement
Guidelines		
Shows restraint	0.497	Moderate agreement
Gives no specific details	0.535	Moderate agreement
Does not romanticize or dramatize	0.745	Substantial agreement
Does not oversimplify the suicide	0.756	Substantial agreement
Uses an abstract image	0.709	Substantial agreement
Gives background/supportive information	0.707	Substantial agreement
Takes account of the privacy	0.870	Almost perfect agreement
Is particularly careful with regards to celebrities	0.849	Almost perfect agreement
Refers to reliable sources	0.821	Almost perfect agreement
Emphasizes the need for seeking help	0.750	Substantial agreement

period, was used as a covariate to correct for seasonal patterns in suicide incidence. Bayesian Correlation Tests were used to get Bayes Factors. These Bayes Factors were performed to quantify the evidence for the null hypothesis by describing the degree of support for the null hypothesis compared to the alternative hypothesis. Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) and JASP.

RQ1. Linear regression analysis was used to examine for each day of the observation period whether the pre-post difference in suicides differed between days in which suicide-related media reports were published versus days in which no such reports were published.

RQ2. Linear regression analysis was also used to examine for each day of the observation period whether there was an association between the number of suicide-related media reports that were published and the pre-post difference in actual suicides.

RQ3. To examine whether the amount of media coverage on specific suicide cases is associated with differences in pre-post lags of actual suicides, linear regression analysis was performed, in which the number of times a suicide-identification number occurred, was used as predictor. In addition, a case study to a high-profile suicide of a celebrity was examined by using a Mann-Whitney U test and by negative binomial regression.

RQ4. Multiple linear regression was used to examine which characteristics of media reports are predictors of increase or decrease in suicides. In addition, linear regression was used to examine whether the potential association between media and actual suicide differs for type of media report.

RESULTS

Descriptive Data

During the observation period, 352 people died by suicide. The mean number of suicides per day was 0.87 ($SD = 0.99$; range = 0–5). A total of 440 media reports were identified using the search terms, with a mean number of 1.15 reports per day ($SD = 1.45$; range 0–9). National media reported more about suicide than regional media, and the media outlet NOS alone contributed to almost half of the reports

TABLE 2. Frequencies and percentages of the media report characteristics.

Characteristic	*n*	%
Media source ($n = 440$)		
NOS	219	49.8
De Volkskrant	106	24.1
Nu.nl	51	11.6
Omroep Brabant	34	7.7
Metro	30	6.8
Media guidelines ($n = 118$)		
Does not oversimplify the suicide	107	90.7
Does not romanticize or dramatize	106	89.8
Shows restraint	65	55.1
Gives no specific details	63	53.4
Is particularly careful with regards to celebrities ($n = 30$)	15	48.4
Takes account of the privacy	49	41.5
Uses an abstract image	42	35.6
Refers to reliable sources	27	22.9
Gives background/supportive information	20	16.9
Emphasize the need for seeking help	2	1.7
Gender ($n = 118$)		
Male	90	76.3
Female	18	15.3
Both (two persons died by suicide)	1	0.8
Unknown	9	7.6
Method of suicide ($n = 118$)		
Firearm	17	14.4
Hanging/self-strangulation	17	14.4
Poison	10	8.5
Vehicular impact (rail, car, metro etc.)	8	6.8
Jumping from height	7	5.9
Burning	4	3.4
Cutting	2	1.7
Drowning	2	1.7
Other methods	5	4.2
Unknown	46	39.0

(49.8%), as can be seen in Table 2. Suicide-cases comprised of 118 reports (26.8%), suicide-news consisted of 56 reports (12.7%) and a total of 266 reports (60.5%) were attributed to the remaining category.

For the 118 suicide-cases, the descriptive statistics are presented in Table 2. Guideline adherence ranged from one to eight (M=4.08; SD = 1.60). The media adhered most in not to oversimplify (n=107; 90.7%) or to romanticize or dramatize (n=106; 89.8%). Providing sufficient supportive background information (n=20; 16.9%) and emphasizing the need for seeking help (n=2; 1.7%) was done the least. Most of the reports reported about male suicide (n=90; 76.3%). Age of the reported deceased ranged from 11 to 83 years (M=41.66; SD = 17.27). About a quarter of the media reports described a suicide of a celebrity (n=30; 25.4%) and in almost half of these reports (n=15; 48.4%), the media showed particularly restraint. The use of firearms (n = 17; 14.4%), hanging or self-strangulation (n = 17; 14.4%) and poisoning (n = 10; 8.5%) were most prevalent methods of suicide. In all cases, the suicide concerned non-fictional people.

Main Results

RQ1. Corrected for seasonal influences, no significant association between the publication of suicide-related media reports and actual suicide was found (t = 0.355; b = 0.140;

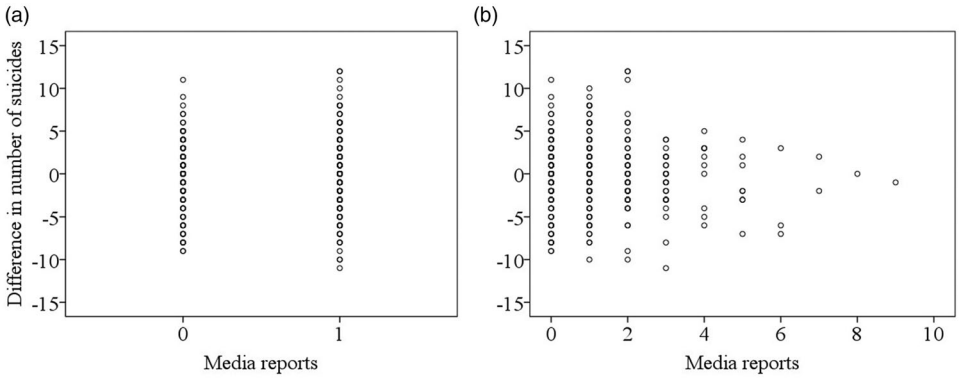

FIGURE 1. Scatter plots of the difference in actual suicides (post minus pre) and publication of media reports dichotomous (a) and continuous (b).

$p = .723$; $R^2 = 0.042$). Bayesian correlations indicate strong evidence for the null hypothesis (no effect; $BF_{01} = 15.625$). If only the reports about suicide cases (type 1) and suicide news (type 2) were included, no significant relation was found either ($t = -0.362$; $b = -0.157$; $p = .718$; $R^2 = 0.042$; $BF_{01} = 13.889$), as can be seen in Figure 1a. The same accounts if only the reports about suicide cases (type 1) were included ($t = 0.480$; $b = 0.236$; $p = .631$; $R^2 = 0.042$; $BF_{01} = 14.925$).

RQ2. There was also no significant association between the number of media reports and actual suicide ($t = -1.082$; $b = -0.146$; $p = .280$; $R^2 = 0.044$). Correction for seasonal influences was done. Substantial evidence for the null hypothesis (no effect) was found ($BF_{01} = 6.849$). The same results were found if only the reports about suicide cases (type 1) and suicide news (type 2) were included ($t = -0.263$; $b = -0.058$; $p = .793$; $R^2 = 0.042$; $BF_{01} = 14.706$), as is shown in Figure 1b. If only suicide cases (type 1) were included, also, no significant results were found ($t = 0.533$; $b = 0.140$; $p = .594$; $R^2 = 0.042$; $BF_{01} = 14.925$).

RQ3. The hypothesis that more suicides will follow after publishing about high-profile cases was also not confirmed ($t = -10.313$; $b = -0.195$; $p = .193$; $R^2 = 0.063$). Correction for patterns in seasonality was done. Bayesian correlations indicate anecdotal evidence for the null hypothesis (no effect; $BF_{01} = 2.632$). The suicide of Chester Bennington (former singer of Linkin Park; on July 20, 2017) was included in the additional analysis as media reporting on celebrities is more likely to result in copycat behavior (Niederkrotenthaler et al., 2009). His suicide was reported 11 times in the included media, whilst the mean reporting frequency per suicide was 2.31 ($SD = 2.61$). Two weeks before his suicides and two weeks after (including the 20th itself), there were 14 and 11 suicides, respectively. This concerns a non-significant decrease of 21.43% ($n = 3$; $U = 92.500$; $p = .788$). Negative binomial regression analysis also indicated no significant effect (Wald χ^2 (1) = 0.350; $p = .554$).

RQ4. Corrected for seasonal influences, multiple regression indicated no significant effects on differences in the number of suicides of reporting the method of suicide ($t = 0.680$; $b = 0.561$; $p = .498$; $R^2 = 0.017$), celebrity-status ($t = .085$; $b = .076$; $p = .932$; $R^2 = .017$), gender ($t = 0.563$; $b = 0.847$; $p = .574$; $R^2 = 0.017$), age ($t = .199$; $b = .160$; $p = .843$; $R^2 = .017$), and guideline adherence ($t = 1.164$; $b = 0.306$; $p = .247$; $R^2 = 0.017$). Substantial evidence for the null hypothesis (no effect) was found in Bayesian correlations

TABLE 3. Outcomes of the main results.

RQ	Variable	*b*	*t*	*p*	R^2	BF_{01}
1	All reports (type 1, 2 & 3)				0.042	15.625
	Media report variable	0.140	0.355	.723		
	Seasonality covariate	1.233	4.067	<.001		
	Only type 1 (cases) & 2 (news)				0.042	13.889
	Media report variable	−0.157	−0.362	.718		
	Seasonality covariate	1.222	4.038	<.001		
	Only type 1 (cases)				0.042	14.925
	Media report variable	0.236	0.480	.631		
	Seasonality covariate	1.233	4.071	<.001		
2	All reports (type 1, 2 & 3)				0.044	6.849
	Media report variable	−0.146	−10.082	.280		
	Seasonality covariate	1.207	3.988	<.001		
	Only type 1 (cases) & 2 (news)				0.042	14.706
	Media report variable	−0.058	−0.263	.793		
	Seasonality covariate	1.224	4.043	<.001		
	Only type 1 (cases)				0.042	14.925
	Media report variable	0.140	0.533	.594		
	Seasonality covariate	1.236	4.078	<.001		
3	All reports (type 1, 2 & 3)				0.063	2.632
	Media report variable	−0.195	−10.313	.193		
	Seasonality covariate	1.132	1.830	.071		
4	All reports (type 1, 2 & 3)				0.017	
	Method of suicide	0.561	0.680	.498		8.000
	Celebrity-status	0.076	0.085	.932		8.403
	Gender	0.847	0.563	.574		8.475
	Age	0.160	0.199	.843		8.696
	Guideline adherence	0.306	1.164	.247		6.135
	Seasonality covariate	0.356	.587	.558		

(BF_{01}=8.000; BF_{01}=8.403; BF_{01}=8.475; BF_{01}=8.696; BF_{01}=6.135, respectively). The type of media report (suicide-cases, suicide-news, and the remaining category) was also not associated with differences in suicides (F (2, 437)=1.504; $p = .223$; R^2=0.007). The outcomes are presented in Table 3.

DISCUSSION

The association between suicide-related media portrayal with actual suicide was examined in the region Noord-Brabant from March 2017 until March 2018. The general conclusion is that suicide-related media reports are not associated with differences in subsequent suicide. In interpreting the results, it is crucial to consider the adherence to the guidelines of the media that were studied. As the descriptive statistics of this study reveal, the media did well when it comes to responsible reporting on suicide. Only to a limited extent, elements that could encourage copycat behavior were included in the reports, as the media hardly ever simplify, romanticize or dramatize the suicides they report. As for any protective effects of media reports on actual suicide, decreases in subsequent completion of suicide are not found. The descriptive statistics of this study reveal that providing sufficient supportive background information and emphasizing the need for seeking help was rarely done in the media reports.

A tentative explanation for not finding any increases in suicides might be that the media adherence to the guidelines is sufficient to not induce imitative behavior. Therefore, as the Dutch media do well concerning limited inclusion of potentially harmful content, it is difficult to draw well-founded conclusions about the effects of media

portrayal on copycat behavior. It was also found in this study that media could simultaneously report on a suicide both according to the media guidelines as well as not according to the media guidelines. The results could, therefore, have been influenced by media reporting with better as well as poorer guideline adherence. This might also be a plausible explanation for the fact that no associations were found.

Moreover, it might be the case that the Werther effect is not a robust phenomenon or that the effect of media on suicide is limited. Some previous studies to the association between media portrayal and suicide also did not, or only partly, support the Werther effect (Hittner, 2005). A recent systematic review and meta-analysis indicated that general reporting of suicide is not expected to be associated with subsequent suicide, although reporting deaths of a celebrity is (Niederkrotenthaler et al., 2020). Cautions against attributing too much effect of the media on suicide has been provided in previous research (Mueller, 2017). There are many risk factors for suicide, such as previous suicide attempts, suicidal ideation, job and financial problems, unbearable mental pain, lack of a support system, trauma, stigma, impulsive aggression, hopelessness, living alone, and being faced with loss (Hawton et al., 1998; Hempstead & Phillips, 2015; WHO, 2014). The predictive power of each individual risk factor of suicide – of which media portrayal is solely one - is thus very low (Gvion & Apter, 2012; Powell, Geddes, Deeks, Goldacre, & Hawton, 2000). Additionally, as suicides are rare events, this might also explain why no associations were found in this study. Reporting bias might also have taken place in the literature, in which mainly studies with positive results were published due to the currently prevailing view that there is a relationship (Niederkrotenthaler et al., 2009; Stack, 2005).

Strengths and Limitations

A strength of this study is that both the effects of (the amount of) media reports as well as the level of guideline adherence were examined. A limitation of our study is that media reports were accessible on the media's websites for longer periods, which might have caused that people were exposed to a media report (long) after publication. Another limitation might be that the distribution of media coverage was somewhat evenly spread over the year and, as a result, no large peaks in media coverage were visible. Moreover, as mentioned earlier, an effect of media on suicidal behavior is expected to be smaller than that of psychosocial risk factors for suicide. There may also be other confounders. Although there was sufficient power in this study to detect small effects, we did not have an overview of these other risk factors of suicide, so we could not correct for any confounders, which is a limitation. There was also no control group included in this study and as a result, no causal relationships could be investigated. The exposure of the included media outlets on the inhabitants of Noord-Brabant was unknown and therefore we were not able to correct for it.

Implications for Practice and Research

Although some literature suggests that there is a small effect of media portrayal on actual suicide, no evidence for such an association is found in this study. The exact role

of media on suicide, in relation to other risk factors of suicide, is yet unknown. A recommendation for practice is to better implement the protective media guidelines, such as stimulating help-seeking behavior, so that the potential preventive effect of media on suicide can be better investigated. For future research, it is recommended to perform more controlled studies to the association between the quality of media reports and actual suicides. This would imply performing a study in a region or country that is well known for low adherence to media guidelines, and then educating the media to improve their reporting. Evaluation studies to the use and effectiveness of media guidelines have been performed (Bohanna & Wang, 2012), also in the context of a multilevel intervention for suicide prevention by the European Alliance Against Depression (Hegerl et al., 2008; 2009). However, to enable evaluation to establish a causal relationship, a study involving multiple regions and a stepped wedge trial might be needed, as this provides an ethical research design to investigate this issue in a controlled setting. Also, in such a study, other variables influencing the decision to attempt suicide should be taken into account as much as possible.

ACKNOWLEDGMENTS

We would like to thank Willem J. Kop, Tilburg University, for his contribution to the design of the concept of the study and his supervision of the thesis of the student (ML). The Netherlands Organisation for Health Research and Development (ZonMw), funder had no role in, or ultimate authority over, the study design, data collection, management, data analysis, data interpretation, writing the report, and the final decision to submit the report for publication.

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the author(s).

AUTHOR NOTES

Emma Hofstra, Tranzo – Scientific Center for Care and Wellbeing, Tilburg University, Tilburg, Netherlands; Specialized Mental Health Institute, GGz Breburg, Tilburg, Netherlands.

Marjan Bakker, Department of Methodology and Statistics, Tilburg University, Tilburg, Netherlands.

Chiara A. M. Diepstraten, Iman Elfeddali, and Mathilde S. Lucas, Tranzo – Scientific Center for Care and Wellbeing, Tilburg University, Tilburg, Netherlands; Specialized Mental Health Institute, GGz Breburg, Tilburg, Netherlands.

Chijs van Nieuwenhuizen, Tranzo – Scientific Center for Care and Wellbeing, Tilburg University, Tilburg, Netherlands; Institute for Mental Health Care, GGzE, Eindhoven, Netherlands.

Christina M. van der Feltz-Cornelis, Department of Health Sciences, Mental Health and Addiction Research Group, Hull York Medical School, YBRI, University of York, York, UK.

Correspondence concerning this article should be addressed to Emma Hofstra Tranzo – Scientific Center for Care and Wellbeing, Tilburg University, P. O. Box 90153, 5000 LE, Tilburg, The Netherlands. Email: E.Hofstra@tilburguniversity.edu

FUNDING

The Netherlands Organisation for Health Research and Development (ZonMw) funded this research [grant number 537001002]. GGz Breburg and the Johannes Wier Foundation supported the study.

ORCID

Emma Hofstra http://orcid.org/0000-0003-4871-8997

DATA AVAILABILITY STATEMENT

The possibilities of placing the data under restricted access in DataverseNL will be examined after the publication of the study.

REFERENCES

113 *Suicide prevention*. (n.d.). Landelijke agenda (in Dutch) [National agenda]. Retrieved from https://www.113.nl/professionals-en-organisaties/landelijke-agenda.

Bohanna, I., & Wang, X. (2012). Media guidelines for the responsible reporting of suicide: A review of effectiveness. Crisis, *33*(4), 190–198. doi:10.1027/0227-5910/a000137

Commissioner of the media. (2018). Mediamonitor 2018.

Etzersdorfer, E., Voracek, M., & Sonneck, G. (2004). A dose-response relationship between imitational suicides and newspaper distribution. *Archives of Suicide Research: Official Journal of the International Academy for Suicide Research*, *8*(2), 137–145. doi:10.1080/13811110490270985

Ganzeboom, H., & Haan, D. (1982). Gepubliceerde zelfmoorden en verhoging van sterfte door zelfmoord en ongelukken in Nederland 1972–1980(in Dutc) [Published suicides and increases in deaths due to suicide and accidents in the Netherlands 1972–1980]. *Mens en Maatschappij*, *57*(1), 55–69.

Gvion, Y., & Apter, A. (2012). Suicide and suicidal behavior. *Public Health Reviews*, *34*(2), 9. doi:10.1007/BF03391677

Hawton, K., Arensman, E., Wasserman, D., Hulten, A., Bille-Brahe, U., Bjerke, T., … & Temesvary, B. (1998). Relation between attempted suicide and suicide rates among young people in Europe. *Journal of Epidemiology & Community Health*, *52*(3), 191–194. doi:10.1136/jech.52.3.191

Hegerl, U., Wittenburg, L., Arensman, E., Van Audenhove, C., Coyne, J. C., McDaid, D., … & Bramesfeld, A. (2009). Optimizing suicide prevention programs and their implementation in Europe (OSPI Europe): An evidence-based multi-level approach. *BMC Public Health*, *9*(1), 428–428. doi:10.1186/1471-2458-9-428

Hegerl, U., Wittmann, M., Arensman, E., Van Audenhove, C., Bouleau, J.-H., Van Der Feltz-Cornelis, C., … & Pfeiffer-Gerschel, T. (2008). The 'European Alliance Against Depression (EAAD)': a multifaceted, community-based action programme against depression and suicidality. *The World Journal of Biological Psychiatry: The Official Journal of the World Federation of Societies of Biological Psychiatry*, *9*(1), 51–58. doi:10.1080/15622970701216681

Hempstead, K. A., & Phillips, J. A. (2015). Rising suicide among adults aged 40–64 years: The role of job and financial circumstances. *American Journal of Preventive Medicine*, *48*(5), 491–500. doi:10.1016/j.amepre.2014.11.006

Hittner, J. B. (2005). How robust is the Werther effect? A re-examination of the suggestion-imitation model of suicide. *Mortality*, *10*(3), 193–200. doi:10.1080/13576270500178112

Hofstra, E., Elfeddali, I., Bakker, M., de Jong, J. J., Van Nieuwenhuizen, C., & van der Feltz-Cornelis, C. M. (2018). Springtime peaks and Christmas troughs: A national longitudinal

population-based study into suicide incidence time trends in the Netherlands. *Frontiers in Psychiatry*, *9*, 45. doi:10.3389/fpsyt.2018.00045

Hofstra, E., Elfeddali, I., Metz, M., Bakker, M., de Jong, J. J., van Nieuwenhuizen, C., & van der Feltz-Cornelis, C. M. (2019). A regional systems intervention for suicide prevention in the Netherlands (SUPREMOCOL): Study protocol with a stepped wedge trial design. *BMC Psychiatry*, *19*(1), 364. doi:10.1186/s12888-019-2342-x

Koburger, N., Mergl, R., Rummel-Kluge, C., Ibelshäuser, A., Meise, U., Postuvan, V., … & Hegerl, U. (2015). Celebrity suicide on the railway network: Can one case trigger international effects? *Journal of Affective Disorder*, *185*, 38–46. doi:10.1016/j.jad.2015.06.037

Köpping, A., Ganzeboom, H., & Swanborn, P. (1989). Verhoging van suicide in navolging van kranteberichten (in Dutch) [Increase of suicide following newspaper reports]. *Nederlands Tijddschrift Voor de Psychologie en Haar Grensgebieden*, *44*(2), 62–72.

Mueller, A. S. (2017). Does the media matter to suicide?: Examining the social dynamics surrounding media reporting on suicide in a suicide-prone community. *Social Science &Medicine (1982)*, *180*, 152–159. doi:10.1016/j.socscimed.2017.03.019

Niederkrotenthaler, T., Braun, M., Pirkis, J., Till, B., Stack, S., Sinyor, M., … & Arendt, F. (2020). Association between suicide reporting in the media and suicide: Systematic review and meta-analysis. *BMJ*, *368*:m575.

Niederkrotenthaler, T., Fu, K.-w., Yip, P. S., Fong, D. Y., Stack, S., Cheng, Q., & Pirkis, J. (2012). Changes in suicide rates following media reports on celebrity suicide: A meta-analysis. *Journal of Epidemiology and Community Health*, *66*(11), 1037–1042. doi:10.1136/jech-2011-200707

Niederkrotenthaler, T., Till, B., Kapusta, N. D., Voracek, M., Dervic, K., & Sonneck, G. (2009). Copycat effects after media reports on suicide: A population-based ecologic study. *Social Science & Medicine (1982)*, *69*(7), 1085–1090. doi:10.1016/j.socscimed.2009.07.041

Niederkrotenthaler, T., Voracek, M., Herberth, A., Till, B., Strauss, M., Etzersdorfer, E., … & Sonneck, G. (2010). Role of media reports in completed and prevented suicide: Werther v. Papageno effects. *The British Journal of Psychiatry: The Journal of Mental Science*, *197*(3), 234–243. doi:10.1192/bjp.bp.109.074633

Phillips, D. P. (1974). The influence of suggestion on suicide: Substantive and theoretical implications of the Werther effect. *American Sociological Review*, *39*(3), 340–354. doi:10.2307/2094294

Pirkis, J., & Blood, R. W. (2001). Suicide and the media: Part I. Reportage in nonfictional media. Crisis, *22*(4), 146–154. doi:10.1027//0227-5910.22.4.146

Pirkis, J., & Blood, W. (2018). *Suicide and the news and information media*. Retrieved from: https://sprc.org/sites/default/files/resource-program/PirkisCritical-Review-Suicide-and-the-news-and-information-media2018.pdf

Pirkis, J., Burgess, P., Francis, C., Blood, R., & Jolley, D. (2006). The relationship between media reporting of suicide and actual suicide in Australia. *Social Science & Medicine (1982)*, *62*(11), 2874–2886. doi:10.1016/j.socscimed.2005.11.033

Pirkis, J., Currier, D., Too, L. S., Bryant, M., Bartlett, S., Sinyor, M., & Spittal, M. (2020). Suicides in Australia following media reports of the death of Robin Williams. *Australian & New Zealand Journal of Psychiatry*, *54*(1), 99–104. doi:10.1177/0004867419888297

Powell, J., Geddes, J., Deeks, J., Goldacre, M., & Hawton, K. (2000). Suicide in psychiatric hospitalin-patients. Risk factors and their predictive power. *The British Journal of Psychiatry: The Journal of Mental Science*, *176*(3), 266–272. doi:10.1192/bjp.176.3.266

Sinyor, M., Schaffer, A., Nishikawa, Y., Redelmeier, D. A., Niederkrotenthaler, T., Sareen, J., … & Pirkis, J. (2018). The association between suicide deaths and putatively harmful and protective factors in media reports. *Journal de L'Association Medicale Canadienne* [CMAJ: Canadian Medical Association Journal], *190*(30), E900–E907. doi:10.1503/cmaj.170698

Sisask, M., & Värnik, A. (2012). Media roles in suicide prevention: A systematic review. *International Journal of Environmental Research*, *9*(1), 123–138.

Stack, S. (2005). Suicide in the media: A quantitative review of studies based on non-fictional stories. *Suicide & Life-Threatening Behavior*, *35*(2), 121–133. doi:10.1521/suli.35.2.121.62877

Statistics Netherlands. (2018). *Overledenen; belangrijke doodsoorzaken (korte lijst), regio* (in Dutch) [Deceased; major causes of death (short list), region]. Retrieved from http://statline.cbs.nl/Statweb/.

Statistics Netherlands. (2019). Niet-natuurlijk overlijden (in Dutch) [Unnatural deaths]. Retrieved from: https://www.cbs.nl/nl-nl/onze-diensten/methoden/onderzoeksomschrijvingen/korte-onderzoeksbeschrijvingen/niet-natuurlijk-overlijden

Värnik, P., Sisask, M., Värnik, A., Laido, Z., Meise, U., Ibelshäuser, A., … & Hegerl, U. (2010). Suicide registration in eight European countries: A qualitative analysis of procedures and practices. *Forensic Science International*, *202*(1–3), 86–92. doi:10.1016/j.forsciint.2010.04.032

Von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P., STROBE Initiative. (2014). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *International Journal of Surgery*, *12*(12), 1495–1499.

Vons, W. (2012). *10 tips voor journalisten bij berichtgeving over suicide* (in Dutch) [10 Tips for journalists when reporting on suicide]. Retrieved from https://ivonnevandevenstichting.nl/site/assets/uploads/10-tips-voor-journalisten.pdf.

WHO. (2014). *Preventing suicide: A global imperative*. Geneva: WHO.

WHO. (2017). *Preventing suicide: A resource for media professionals*. Geneva: WHO.

ZonMw. (2015). *Programma Suïcidepreventie* (in Dutch) [Program suicide prevention]. Retrieved from https://www.zonmw.nl/nl/onderzoek-resultaten/geestelijke-gezondheid-ggz/programmas/programma-detail/suicidepreventie/.